

# Mineral Industry Surveys

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## VANADIUM IN MAY 2003

Domestic consumption of vanadium in May 2003 was about 9% less than that of the previous month and was about 12% less than that of May 2002, according to the U.S. Geological Survey. Consumer stocks of vanadium, in all forms, were 209 metric tons (t) at the beginning of 2003.

According to Ryan's Notes (2003b), the range for U.S. ferrovanadium prices during May was \$5.911 to \$6.167 per pound of vanadium content, as compared with \$5.933 to \$6.250 in April. European ferrovanadium ranged from \$11.533 to \$11.867 per kilogram of vanadium content in May as compared with \$12.761 to \$13.044 in April. In May, vanadium pentoxide prices ranged from \$2.650 to \$2.800 per pound, as compared with \$2.617 to \$2.778 in April.

Prices of ferrovanadium (FeV), and its raw material vanadium pentoxide ( $V_2O_5$ ), have nearly doubled since June 2002, when duties were imposed on FeV imports from South Africa and China (Platts Metals Week, 2003), as South Africa and China were major suppliers to the United States. The Platts Metals Week Free Market  $V_2O_5$  price in May 2003 was \$2.50-\$2.75 per pound as compared with \$1.50-\$1.75 per pound for June 2002. The Platts United States FeV spread was \$5.50-\$6.00 per pound

in May 2003, while it was \$3.50-\$3.75 per pound for the week of May 23, 2002.

Highveld Steel and Vanadium (Highveld) may cut steel and vanadium production, as the strong South African rand has eroded export margins and domestic demand has slowed (Metal Bulletin Research, Ferro-alloys Monthly, 2003). The company expects first half earnings to be considerably lower than for the same period in 2002 and also expects production to fall on a year-to-year basis. Highveld produced 74,395 t of vanadium slag in 2002, a 10-year high (Ryan's Notes, 2003a).

## References Cited

- Platts Metals Week, 2003,  $V_2O_5$  follows FeV higher a year after duties: Platts Metals Week, v. 74, no. 25, May 19, p. 12.  
Metal Bulletin Research, Ferro-alloys Monthly, 2003, Slowing demand means market requires production discipline: Metal Bulletin Research, Ferro-alloys Monthly, no. 129, May 29, p. 15.  
Ryan's Notes, 2003a, Highveld Steel and Vanadium: Ryan's Notes, v. 10, no. 19, May 12, p. 4.  
Ryan's Notes, 2003b, [untitled]: Ryan's Notes, v. 9, no. 22, June 2, p. 4.

TABLE 1  
U.S. CONSUMPTION AND CONSUMER STOCKS OF VANADIUM, BY FORM<sup>1</sup>

(Kilograms, contained vanadium)

	2002 <sup>p</sup>		2003			
			April		May	
	Consumption	Stocks	Consumption	Stocks	Consumption	Stocks
Ferrovandium <sup>2</sup>	2,790,000	189,000	236,000 <sup>r</sup>	176,000 <sup>r</sup>	220,000	187,000
Vanadium-aluminum alloy	W	W	W	12,700 <sup>r</sup>	W	11,900
Other <sup>3</sup>	351,000	20,200	28,400 <sup>r</sup>	5,890	18,900	5,890
Total	3,140,000	209,000	264,000 <sup>r</sup>	195,000 <sup>r</sup>	239,000	204,000

<sup>r</sup>Revised; <sup>p</sup>Preliminary. W Withheld to avoid disclosing company proprietary data; included with "Other."

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes other vanadium-iron-carbon alloys as well as vanadium oxides added directly to steel.

<sup>3</sup>Includes other vanadium alloys, vanadium metal, vanadium pentoxide, vanadates, chlorides, other specialty chemicals, and items indicated by symbol W.

TABLE 2  
U.S. CONSUMPTION OF VANADIUM, BY END USE<sup>1</sup>

(Kilograms, contained vanadium)

	2002 <sup>p</sup>	2003		
		April	May	Year to date <sup>3</sup>
Steel:				
Carbon	878,000	65,000 <sup>r</sup>	60,800	324,000
High-strength low-alloy	W	W	W	W
Stainless and heat-resisting	36,600	2,110	2,210	11,100
Full alloy	754,000	62,900	59,700	328,000
Tool	265,000	22,200	19,800	109,000
Total steel	1,930,000	152,000 <sup>r</sup>	143,000	773,000
Superalloys	13,400	1,220 <sup>r</sup>	1,030	5,510
Miscellaneous and unspecified <sup>2</sup>	1,190,000	111,000 <sup>r</sup>	95,700	520,000
Total consumption	3,140,000	264,000 <sup>r</sup>	239,000	1,300,000

<sup>p</sup>Preliminary. <sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous and unspecified."

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes cast irons, high-strength low-alloy steel, alloys excluding steel and superalloys, chemical and ceramic uses, and other miscellaneous and unspecified uses.

<sup>3</sup>Includes revisions to prior month's data.

TABLE 3  
U.S. IMPORTS AND EXPORTS OF ALUMINUM-VANADIUM MASTER ALLOY AND VANADIUM  
METAL, INCLUDING WASTE AND SCRAP<sup>1</sup>

(Kilograms, gross weight)

	Aluminum-vanadium master alloy		Vanadium metal, including waste and scrap	
	Quantity	Value	Quantity	Value
Imports for consumption:				
2002	97,500	\$206,000	32,300	\$1,270,000
2003:				
February	5,260	10,300	1,160	107,000
March	22,500	34,200	5,110	92,200
April:				
Germany	--	--	51	21,000
Russia	--	--	172	12,000
Total	--	--	223	33,100
Year to date	67,400	107,000	16,300	373,000
Exports:				
2002	529,000	11,700,000	49,200	898,000
2003:				
February	92,000	1,090,000	18,400	348,000
March	80,800	919,000	9,960	139,000
April:				
Austria	--	--	3,390	34,800
Canada	72,800	742,000	--	--
Germany	--	--	1	4,530
Korea, Republic of	5,800	91,300	--	--
Malaysia	--	--	29,000	65,400
Mexico	9,140	43,300	--	--
Netherlands	2,110	30,900	--	--
Norway	3,910	39,900	--	--
Russia	--	--	137	45,600
Singapore	139	2,620	--	--
United Kingdom	562	6,340	--	--
Total	94,500	957,000	32,500	150,000
Year to date	355,000	4,120,000	99,900	2,730,000

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 4  
U.S. IMPORTS AND EXPORTS OF FERROVANADIUM, VANADIUM PENTOXIDE (ANHYDRIDE) AND  
OTHER OXIDES AND HYDROXIDES OF VANADIUM<sup>1</sup>

(Kilograms, contained vanadium)

	Ferrovanadium		Vanadium pentoxide (anhydride) <sup>2</sup>		Other oxides and hydroxides of vanadium	
	Quantity	Value	Quantity	Value	Quantity	Value
Imports for consumption:						
2002	2,520,000	\$19,400,000	406,000	\$1,990,000	42,300	\$560,000
2003:						
February	119,000 <sup>r</sup>	890,000	77,000 <sup>r</sup>	313,000	--	--
March	54,700 <sup>r</sup>	411,000	75,700 <sup>r</sup>	299,000	9,720 <sup>r</sup>	128,000
April:						
Austria	24,300	225,000	--	--	--	--
Canada	25,900	149,000	--	--	--	--
Germany	--	--	200	5,950	--	--
South Africa	--	--	56,800	262,000	--	--
Taiwan	--	--	450	2,540	--	--
Total	50,100	374,000	57,500	270,000	--	--
Year to date	376,000	2,730,000	254,000	1,040,000	9,720	128,000
Exports:						
2002	142,000	1,550,000	91,200	568,000	203,000	1,700,000
2003:						
February	22,200	246,000	7,000	66,500	17,000	166,000
March	146,000	1,890,000	6,690	62,500	15,200	177,000
April:						
Canada	10,000	141,000	--	--	5,380	59,600
Japan	--	--	12,100	115,000	325	2,890
Mexico	34,500	545,000	--	--	--	--
Saudi Arabia	--	--	23,100	147,000	--	--
Taiwan	--	--	2,920	27,800	--	--
Trinidad and Tobago	--	--	1,450	16,000	--	--
Total	44,500	686,000	39,600	306,000	5,700	62,500
Year to date	225,000	2,980,000	113,000	938,000	57,300	591,000

<sup>r</sup>Revised. -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>May include catalysts containing vanadium pentoxide.

Source: U.S. Census Bureau.

TABLE 5  
U.S. IMPORTS FOR CONSUMPTION OF VANADIUM-BEARING ASH, SLAG<sup>1</sup>

(Kilograms, contained vanadium pentoxide)

	Ash and residues		Ash and residues (not from the manufacture of iron and steel)		Slag, from the manufacture of iron and steel	
	Quantity	Value	Quantity	Value	Quantity	Value
2002	3,830,000	\$520,000	10,300,000	\$1,560,000	243,000,000	\$19,900,000
2003:						
February	--	--	531,000	93,100	575,000	72,300
March	75,200	11,600	765,000	265,000	691,000	91,500
April:						
Canada	--	--	906,000	131,000	778,000	85,400
Netherlands Antilles	150,000	52,300	--	--	--	--
Total	150,000	52,300	906,000	131,000	778,000	85,400
Year to date	262,000	66,400	2,990,000	628,000	6,580,000	503,000

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF MISCELLANEOUS VANADIUM CHEMICALS<sup>1</sup>

(Kilograms, contained vanadium)

	Sulfates		Vanadates	
	Quantity	Value	Quantity	Value
2002	14,100	\$390,000	48,100	\$567,000
2003:				
February	--	--	24,800 <sup>r</sup>	97,700
March	--	--	9,850 <sup>r</sup>	50,700
April, Japan	--	--	270	4,060
Year to date	--	--	35,000	156,000

<sup>r</sup>Revised. -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.